

Application No. 09/719,907
Supplemental Amendment dated July 11, 2003

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1. (currently amended) A method for measuring the displacement of a fluid in a conduit, having two transducers offset along a main axis of the conduit [by calculating a difference in ultrasound transit time between two transducers in one direction and in the other], the method comprising the steps of [characterised by the steps]:

[of] simultaneously exciting the two transducers using a single exciting circuit,
[then]

simultaneously measuring signals received at each one of the transducers
originating from the other transducer,

[and by a step of] synchronously digitizing the signals received at each one of both
[the] transducers[.], and

calculating a difference in ultrasound transit time between the two transducers in one direction and in the other.

Claim 2. (canceled)

Claim 3. (previously amended) The method according to claim 1, wherein the step of calculating comprises intercorrelating signals received at each one of the transducers and seeking an intercorrelation maximum.

Claim 4. (previously amended) The method according to claim 1, wherein the step of calculating comprises intercorrelating received signals, calculating the Hilbert transform of intercorrelation, and seeking zeros of the Hilbert transform.

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Claim 5. (previously amended) The method according to claim 4, wherein the seeking of zeros is performed by polynomial interpolation of the Hilbert transform, preferably by interpolation using a third degree polynomial.

Claim 6. (previously amended) The method according to claim 1, further comprising a step of calibrating by measuring ultrasound propagation time outside the flowing fluid.

Claim 7. (previously amended) The method according to claim 6, wherein the step of calibrating comprises successive measurement of transit time between the transducers for two fluids of different and known velocities.

Claim 8. (previously amended) The method according to claim 1, further comprising a step of correcting values of ultrasound propagation time outside the flowing fluid, as a function of temperature.

Claims 13-24 (canceled).

Rule 1.126 ²⁴28. (previously added) A method for measuring the displacement of a fluid in a conduit, having two transducers offset along a main axis of the conduit, the method comprising the steps of:

simultaneously exciting the two transducers,

simultaneously measuring signals received at each one of the transducers originating from the other transducer,

synchronously digitizing the signals received at each one of both transducers, and

calculating a difference in ultrasound transit time between the two transducers in one direction and in the other, by intercorrelating received signals, calculating the Hilbert transform of intercorrelated signals, and seeking zeros of the Hilbert transform.

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- ²⁹26. (previously added) The method according to claim ²⁸25, wherein the step of simultaneously exciting uses a single exciting circuit.
- ³²27. (previously added) The method according to claim ²⁸25, wherein the seeking of zeros is performed by polynomial interpolation of the Hilbert transform, preferably by interpolation using a third degree polynomial.
- ³¹28. (previously added) The method according to claim ²⁷26, wherein the seeking of zeros is performed by polynomial interpolation of the Hilbert transform, preferably by interpolation using a third degree polynomial.
- ³²29. (previously added) The method according to claim ²⁸25, further comprising a step of calibrating by measuring ultrasound propagation time outside the flowing fluid.
- ³³30. (previously added) The method according to claim ³²29, wherein the step of calibrating comprises successive measurement of transit time between the transducers for two fluids of different and known velocities.
- ³⁴31. (previously added) The method according to claim ²⁸25, further comprising a step of correcting values of ultrasound propagation time outside the flowing fluid, as a function of temperature.